



# Utah Department of **NATURAL RESOURCES**

## FOR IMMEDIATE RELEASE

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## **Weekly Drought Update for the Week of July 5**

**Salt Lake City** (July 8, 2021) – Drought continues to intensify, with 98% of the state now in the two worst categories: extreme and exceptional, according to the [U.S. Drought Monitor](#). With just three months left in the water year, data indicates it will take 10 inches of additional precipitation between now and October to reach “normal,” during a time when the state averages 5 inches.

“Utah’s precipitation is down about 38% this year compared to an average year. It’s extremely unlikely we can make up that deficit between now and the end of the watering year on Sept. 30,” said Utah Department of Natural Resources Executive Director Brian Steed. “When we consider future patterns, we should not expect an immediate recovery from this extreme drought. We anticipate it will take time, possibly years, to climb out of this drought.”

The following measurements and information from the week of July 5 are compiled by the Utah Divisions of Water Resources and Water Rights. They provide context to Utah’s current drought conditions, water storage, stream flows and water rights allocation.

### **At-a-glance changes for the week:**

- Utah normally receives 27 inches of precipitation by this point of the water year, which runs from October through September. We have currently received 17 inches, which gives us a 10-inch (38%) deficit to make up to reach normal levels.
- According to the latest information [released](#) by the U.S. Drought Monitor, drought conditions worsened statewide, with 98% of the state experiencing “extreme” or “exceptional” drought conditions, compared to 92% the previous week. (Extreme and exceptional drought conditions are the most serious categories.)
- Soil moisture improved somewhat and is now 6% drier than average compared to 11% last week. This is a result of slightly above-normal precipitation two weeks ago.



- Streamflow statewide remains low which means less water is getting to reservoirs. Although six measured streams improved due to rain, 65 of the 96 continue to flow below normal. Daily flow from 28 headwater streams is currently flowing below the previous minimum daily flow record.
- Reservoir levels continue to be a concern as storage decreased from 61% last week to 59% this week. Twenty-six (23 last week) of Utah's largest 42 reservoirs are below 55% of available capacity. Willard Bay, Hyrum Reservoir and Joe's Valley Reservoir dropped below 55% this week.
- The natural flow and percent of direct flow water rights on the portions of the river systems illustrated below continue to decrease. Most water rights across the state continue to experience earlier than normal curtailment.
- The Great Salt Lake is now about three inches from its historic low recorded in 1963 and is expected to drop below the record low in the coming days. The Division of Water Resources evaluates daily averages rather than the instantaneous readings recorded every 15-minutes. Taking this approach provides us with a more accurate reading rather than a single snapshot in time.

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## **FULL REPORT: WEEK OF JULY 5**

### **Precipitation and soil moisture**

Utah's drought conditions continue to worsen despite some precipitation. The state mountain observation sites have received around 17 inches of precipitation (rain, snow, hail) this water year (which runs from Oct. 1-Sept. 30), rather than the 27 inches typically received to date during an average year. The total average precipitation for the entire water year is about 32 inches, so those 10 inches need to fall during a time when Utah typically receives around 5 inches.

When, where and how the water falls also make a difference. Water from short, intense storms like those experienced recently in southern Utah runs off rather than soaking into the soil where plants can access it.

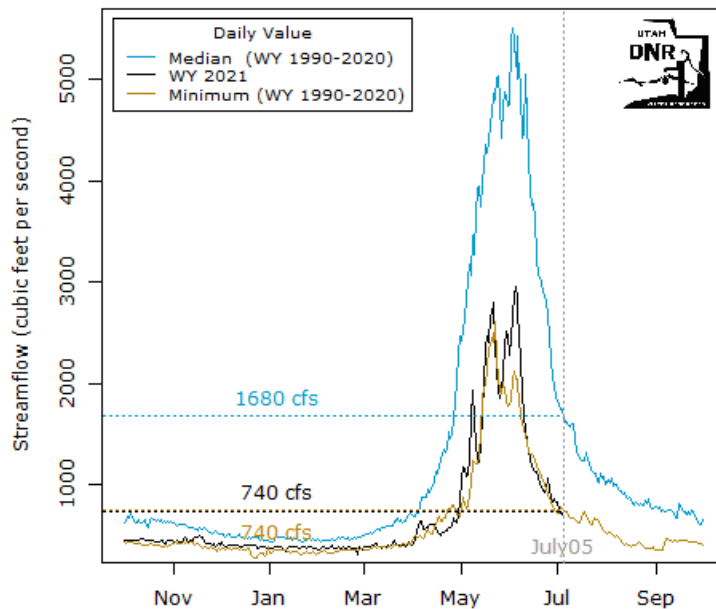
- To restore conditions to "average" for the year, Utah still needs 15 inches of rain: 10 inches to cancel the deficit, and 5 inches to account for the precipitation traditionally accumulated from July through September.
- To get streams running at healthy levels while filling reservoirs, Utah needs an above-average snowpack and frequent, but not extreme, warm-season storms to return soil moisture levels to normal.
- Air temperatures for the week were 0.98 degrees Fahrenheit below average, down from 5.6 degrees Fahrenheit above average last week.
- Overall, the state experienced near-average precipitation during the last week. Rainfall was localized, with some areas receiving more than average and some areas receiving less.
- Soils moisture improved by 5% last week due to precipitation. Soils are now 6% drier than average, with soil moisture for July 5 at 37.6% saturation, compared to an average of 43.3% saturation.

## Streamflows

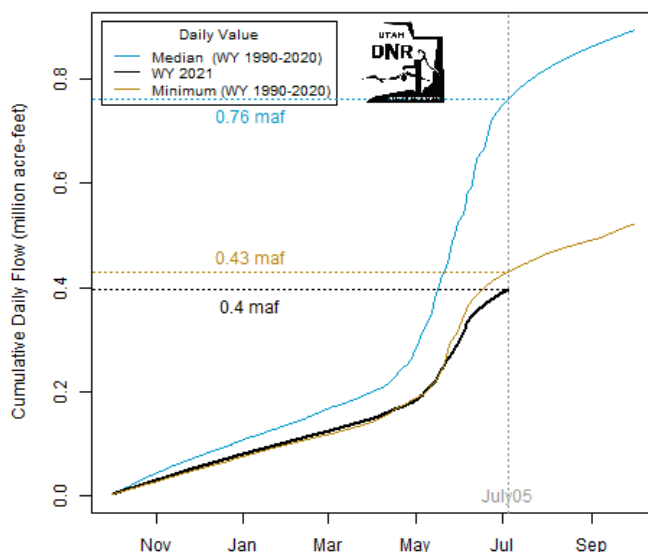
Extremely dry soils persist. Streams statewide continue to flow at less than 50% of normal, although the number of streams flowing below normal has decreased from last week.

- Sixty-five (71 reported last week) of Utah's 96 streams reporting data are flowing below normal. This is a decrease of six from the previous week.
- Six streams are flowing at their lowest levels ever recorded. This is a decrease from seven streams flowing at record low levels last week.

**Daily Flow from 28 Headwater Streams**



a.) The flows for 28 headwater streams were added together to show how Utah's water supply is being affected. This chart shows the Water Year (WY) from October to September for the median year (1990-2020) (blue line), the minimum year (mustard line) during that time period and this year (black line).



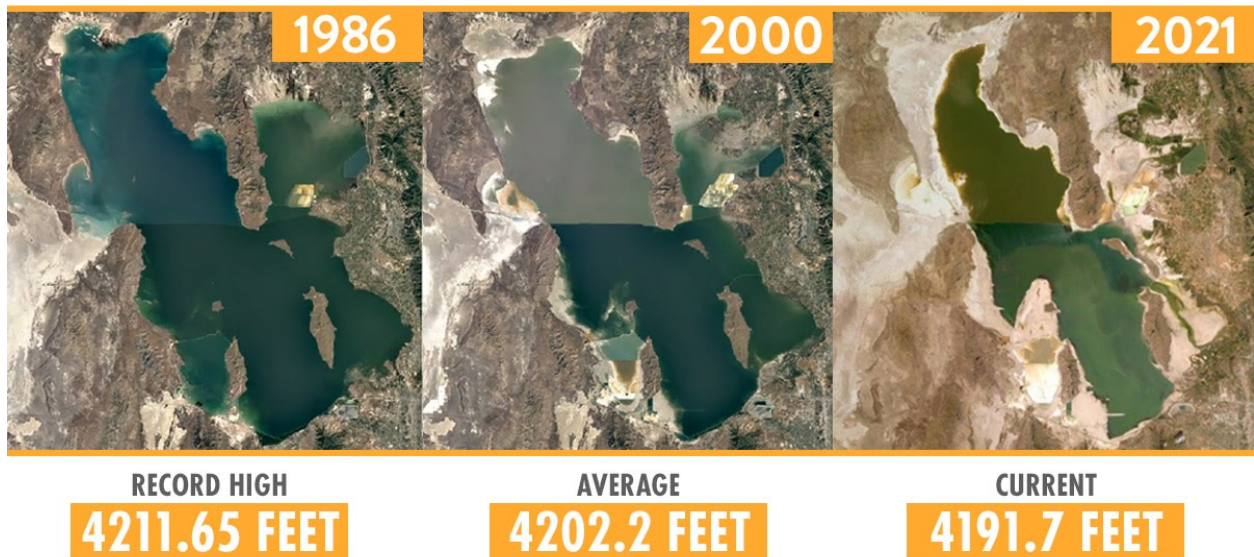
b.) The flows for 28 headwater streams were added together to show how the daily stream flows range giving state perspective. This chart shows the Water Year (WY) from October to September for the median year (1990-2020) (blue line), the minimum year (mustard line) during that time period and this year (black line). **Utah streams are near the previous minimum daily flow record.**

## **Reservoir and Lake Levels**

About 95% of Utah's water comes from snowpack. This statewide average ranges from around 75% in the southwest corner to over 95% in the northern part near the Weber Basin headwaters. Different-sized reservoirs are located throughout the state to catch and store runoff. Small reservoirs store about one year's worth of water, while larger reservoirs, like Strawberry or Jordanelle, store several year's worth. Reservoir storage helps to prevent water shortages and is dependent on snowpack and runoff.

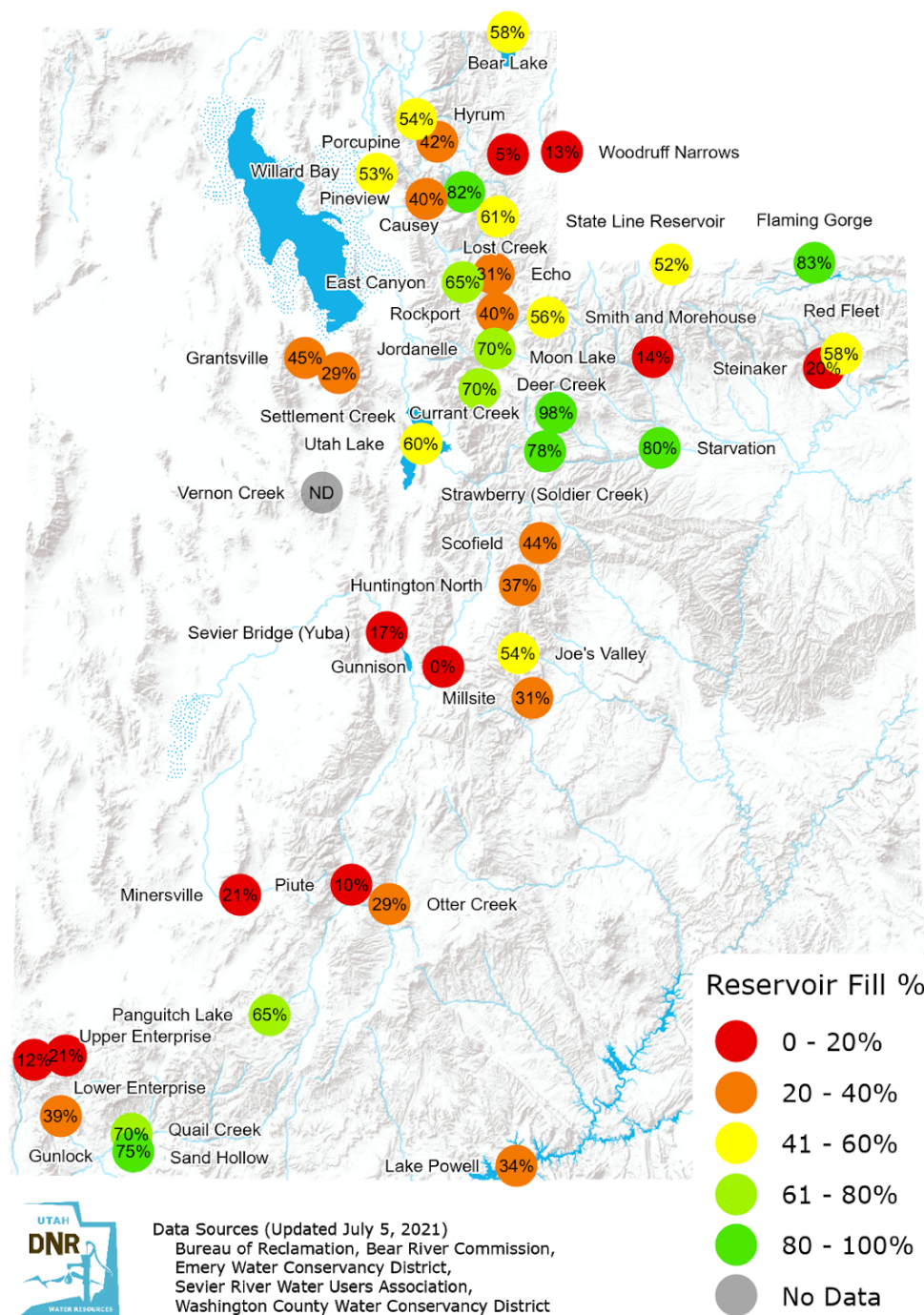
- The capacity of major reservoirs statewide dropped another 2% this week compared to last week. Current storage capacity is 59%.
- 26 of 42 of our largest reservoirs are below 55% of available capacity, which is an increase of three new reservoirs dropping below that threshold, including Willard Bay, Hyrum Reservoir and Joe's Valley Reservoir
- Several Bureau of Reclamation reservoirs are below any previous storage and elevation level in the last 30 years, including Lake Powell, Rockport, Echo and Steinaker.
- The Great Salt Lake's current elevation held steady at about 4,191.7 feet, about three inches from its historic recorded low level (4191.4 feet) documented in 1963. Modeling indicates the lake will surpass its historic low this month.

## **GREAT SALT LAKE ELEVATION**





## Reservoir levels as of July 5, 2021



### **Drought Effects on Priority Distribution of Water Rights in Utah (updated July 5)**

While statewide there are many different river systems, the information below highlights water rights priorities, natural flow and direct flow on just four of them. CFS below stands for cubic feet per second.

**Middle Bear River** – Priorities: Direct Flow (1860 - 1909), Storage (1911), High Rights (1914 - 1989)

<i>Date</i>	<i>Priority from River</i>	<i>Natural Flow</i>	<i>% Direct Flow Rights</i>
July 1, 2019	1989	2,509 cfs	180%
July 1, 2020	Storage (1911)	1,891 cfs	136%
July 1, 2021	1889	239 cfs	17%

- The water supply on the Logan River, tributary to the Middle Bear, is third lowest on record out of 58 years (1977 and 1992 were lower) according to the CRBFC Water Supply Forecast (Station LGNU1).
- Currently, only 17% (13% last week) of the direct flow water rights are being met with the earliest priority rights being fulfilled from 1860 to 1889.
- Natural flows increased from 185 cfs last week to 239 cfs this week, which has allowed for a 4% increase in the 1889 priority direct flow water rights being delivered.

**Upper Provo River** – Priorities: Direct Flow (1<sup>st</sup> Class - 17<sup>th</sup> Class), Storage

<i>Date</i>	<i>Priority from River</i>	<i>Natural Flow</i>	<i>% Direct Flow Rights</i>
July 2, 2019	Storage	761 cfs	168%
July 2, 2020	5th Class	161 cfs	35%
July 2, 2021	50% 1 <sup>st</sup> Class	76 cfs	17%

- The water supply on the Provo River at Hailstone is the third lowest on record out of 67 years (1977 and 1961 were lower) according to the CRBFC Water Supply Forecast (Station PVHU1).
- Consistent with last week,, only 17% of the direct flow water rights are being met, consisting of only 50% of 1st Class rights.
- Natural flows have held steady from last week at 76 cfs.

**Upper Duchesne River** – Priorities: Direct Flow (1900 - 1964), Storage (1964)

<i>Date</i>	<i>Priority from River</i>	<i>Natural Flow</i>	<i>% Direct Flow Rights</i>
July 1, 2019	Storage	3,549 cfs	320%
July 1, 2020	1936	606 cfs	55%
July 1, 2021	1910	272 cfs	25%

- The water supply on the Duchesne River at Randlett is the second-lowest on record out of 79 years (1977 was lower) according to the CRBFC Water Supply Forecast (Station DURU1).
- Currently, only 25% (20% last week) of the direct flow water rights are being met with the earliest priority rights being fulfilled from 1900-1910.
- Natural flows increased from 225 cfs last week to 272 cfs this week, which has allowed for a 5% increase in the 1910 priority direct flow water rights being delivered.

**Upper Sevier River – Priorities: Direct Flow (1<sup>st</sup> Class – 3<sup>rd</sup> Class), Storage**

<i>Date</i>	<i>Priority from River</i>	<i>Natural Flow</i>	<i>% Direct Flow Rights</i>
July 1, 2019	Storage	838 cfs	206%
July 1, 2020	18% 1 <sup>st</sup> Class	56 cfs	14%
July 1, 2021	25% 1 <sup>st</sup> Class	76 cfs	19%

- The water supply on the Sevier River at Piute is the lowest on record out of 103 years according to the CRBFC Water Supply Forecast (Station PIUU1).
- Currently, only 19% (16% last week) of the direct flow water rights are being met, consisting of only 25% of 1st Class rights.
- Natural flows increased from 64 cfs last week to 76 cfs this week, which has allowed for a 3% increase in 1st Class priority direct flow water rights being delivered.

**Understanding Water Rights and Priority Distribution**

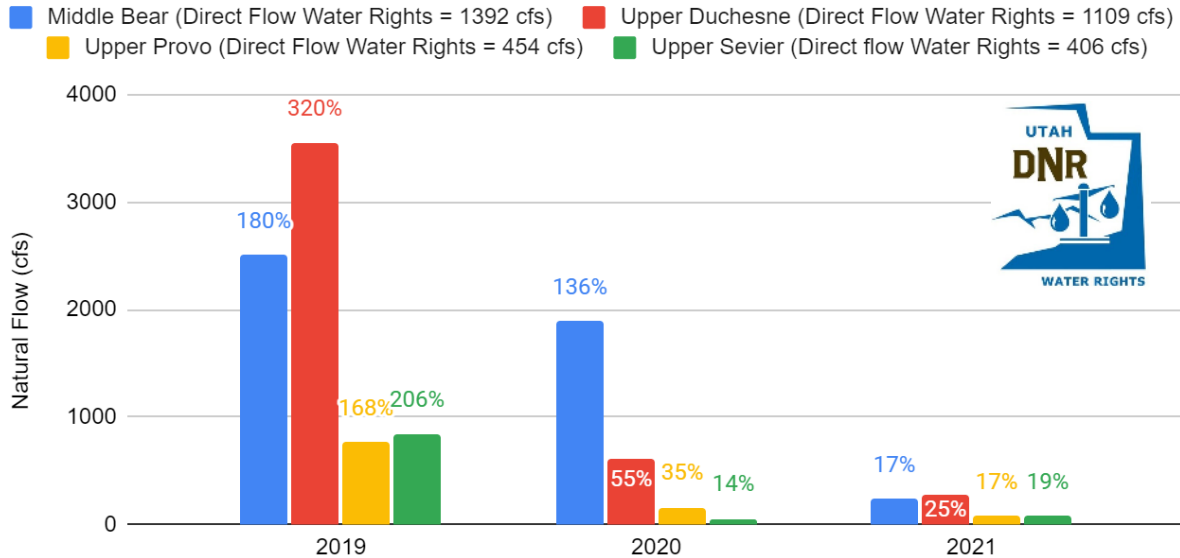
Water rights are distributed by the state engineer with priority going to the earliest rights. For example, a water right established in 1889 is entitled to receive its full flow before water rights established in 1890 or later can receive any water. This principle is called the “Prior Appropriation Doctrine” or “first in time, first in right.” The earliest water rights in Utah are called “direct flow” rights, meaning they cannot be stored. Storage reservoirs were built later on, so storage rights generally have priority dates later than direct flow rights, although some “high” water rights (direct flow rights with late priority dates) exist.

While some water rights are owned by public water suppliers, others are held by individuals like farmers and ranchers. Priority distribution happens every year, not just during droughts, and occurs irrespective of the type of use. Most water rights are fully or partially curtailed by mid-summer when the natural flow of a stream drops following spring runoff. The term “natural flow” refers to the total supply of a stream, which is generally different from the flow of the stream at any particular point.

Natural flow on complex systems is determined using accounting models developed by the Division of Water Rights. When the natural flow is greater than 100% of the direct flow rights, water can be stored on the system. When the natural flow drops below 100% of the direct flow rights, these rights are reduced according to priority date. Storage, if available, can be released to make up all or part of the deficit. The amount of storage available on each system is a function of the specific projects developed on the system over the last hundred-plus years. This year has seen an early decrease in natural flow because of very little spring runoff. In previous years systems were generally storing water in mid-June, sometimes in considerable amounts, while 2021 is already seeing some of the earliest water rights being curtailed.

## Natural Flow Distribution on Four River Systems (July 2)

Percent Values Greater than 100 Indicate Water Being Stored



### Well Replacements

In addition to surface water rights, the state engineer oversees the appropriation of groundwater and construction of groundwater wells. A water right may be approved to allow for the diversion of surface water, groundwater, or a combination of both surface and groundwater. Both surface and groundwater rights are also distributed under the priority system. As groundwater conditions change, well owners may need to replace their well. This may be due to issues of the existing well, or the need to drill deeper. When this happens a water user files either a replacement, or renovate application. In some cases, a change application may need to be filed. This is dependent on the individual status of the user's water right.

- So far this year there have been 81 total replacement and deepening requests made statewide. This is an increase of four from last week. If this trend holds, Utah will exceed its annual average well replacements in 2021.
- As a comparison, there were 113 in 2020 and 102 in 2019. The average annual count during the past five years is 107.